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Richard J. Streit
Name

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT:	In Cheol PARK et al	)Group Art Unit: 2871
SERIAL NO:	09/345,270	)Examiner: D. Nguyen
FILED:	June 30, 1999	)**EXPEDITED PROCEDURE**) **RESPONSE AFTER FINAL**

TITLE: REFLECTIVE LIQUID CRYSTAL DISPLAY OF HIGH APERTURE RATIO, HIGH TRANSMITTANCE AND WIDE VIEWING ANGLE

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RESPONSE

Sir:

This is in response to the Final Office Action dated December 18, 2001 and having a shortened statutory period for reply set to expire on March 18, 2002. Applicants submit the following response in the above-identified application. Applicants believe this response places the application in better condition for allowance.

In the Office Action, dated December 18, 2001, the Examiner states that Claims 1-31 are pending, Claims 1-20 are rejected, and Claims 21-31 are removed from consideration.

In the Office Action, the Patent Office rejects Claims 1-3, 9, 10, and 15 under 35 U.S.C. §103(a) as unpatentable over the Applicants' admitted prior art (APA), in view of Ota et al. (US 5,831,707) and Channin (US 4,385,805), Claims 4, 8, 16 and 20 are further rejected as unpatentable over APA in view of Ota et al., Hiroshi, and Kondo et al. (US 6,124,915). Claims 11-14 are further rejected as unpatentable over APA in

view of Ota et al., Hiroshi, and Lee et al. (US 5,886,762). Applicants respectfully disagree with these objections.

The present invention as claimed provides a reflective liquid crystal display using a fringe field and characterized in that the electrodes are made of a transparent conductor and the distance between substrates is greater than the distance between the electrodes. In addition, the present invention as claimed is characterized in that a quarter wave plate is sandwiched between a lower substrate and a reflective plate.

Accordingly, in the present invention, both counter and pixel electrodes are made of transparent materials, and the distance between the electrodes is narrower than the cell gap so that a plurality of fringe field are formed. Also, the width of the liquid crystal molecules are formed narrow enough to drive the liquid crystal molecules formed in both sides of the electrodes, thereby driving all liquid crystal molecules in the upper portions of the electrodes.

In contrast, Ota et al. provides an active matrix type liquid crystal display apparatus having a high aperture ratio, which uses the latter display mode and is prevented from generating orientation failure domains.

Channin provides a liquid crystal lens display system comprising a liquid crystal lens, display elements, a polarizer and a light source.

Hiroshi relates to an IPS (In-Plane-Switching) liquid crystal display that exhibits a wide viewing angle, and which discloses that the distance between two adjacent electrodes 48 and 49 is less than the thickness of the liquid crystal layer.

The technical differences between the present invention and these references is as follows. Ota et al. relates to the active matrix type liquid crystal display apparatus but does not disclose a reflective liquid crystal display using fringe fields and a quarter wave plate sandwiched between a lower substrate and a reflective plate as claimed in the present invention. In addition, Channin and Hiroshi do not teach a reflective liquid crystal display using fringe fields, electrodes made of a transparent material, or quarter wave plate sandwiched between a lower substrate and a reflective plate, as claimed in the present invention.

Accordingly, the present invention as claimed differs from cited patents in view of the applied field of the invention, the use of fringe field, the electrodes made of a

transparent material, and the existence of the quarter wave plate sandwiched between a lower substrate and a reflective plate.

Therefore, Applicants consider that the present invention as claimed is not easily conceivable from any of these cited patents or any combination thereof. Applicants therefore consider the rejections overcome.

In light of the foregoing response, all the outstanding objections and rejections have been overcome. Applicants respectfully submit that this application should now be in better condition for allowance and respectfully request favorable consideration.

Respectfully submitted,

March 15, 2002
Date

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